WHAT IS CLAIMED IS:

1. A method of sensing a mechanical property of a material, comprising:

providing at least one capacitor having two structures, each structure including an electrode;

placing a material onto the capacitor;

applying a voltage to the capacitor through the electrodes to direct a force to the material sample;

monitoring a response of the material to the force with at least one response sensing device, wherein the response of the material is indicative of a mechanical property.

2. The method of claim 1, wherein the mechanical property is selected from the group consisting of flexure, uniaxial extension, biaxial compression, shear, stress and strain at failure, toughness, Young's modulus, complex modulus, adhesion, and combinations thereof.

3. The method of claim 1, wherein the mechanical property is Young's modulus.

4. The method of claim 1, further comprising regulating environmental conditions of the material.

5. The method of claim 1, wherein the at least one response sensing device is selected from the group consisting of an optical response sensing device selected from the group consisting of optical reflectance, optical interferometry, shadow illumination, and combinations thereof; an electrical

response sensing device selected from the group consisting of capacitance, resistance, electromechanical switching, and combinations thereof; a wafer sensor, and combinations thereof.

6. The method of claim 1, further comprising securing the material to one of the structures.

7. The method of claim 6, wherein the material is secured onto the structure mechanically, magnetically, electromagnetically, electromechanically, chemically, or combinations thereof.

8. The method of claim 1, wherein the voltage is selected from the group consisting of oscillatory, non-oscillatory, and combinations thereof.

9. The method of claim 1, wherein the voltage is supplied by voltage supply selected from the group consisting of a variable voltage power supply, a programmable constant current source and a voltmeter, and combinations thereof.

10. The method of claim 1, wherein each of the materials has an area of less than about 50 mm^2.

11. The method of claim 1, wherein each of the materials has a thickness of less than about 500 microns.

12. The method of claim 1, further comprising:

providing a plurality of capacitors;

placing a library of at least four different materials onto the capacitors wherein each of the materials corresponds with one of the capacitors;

applying a voltage to the structures through the electrodes to direct a force to each of the materials; and

monitoring a response of each of the materials to the force with at least one response sensing device, wherein the response of the materials is indicative of a mechanical property.

13. The method of claim 12, wherein the method is capable of sensing a mechanical property of at least two materials of the library simultaneously.

14. The method of claim 12, wherein the method is capable of sensing a mechanical property of at least twenty-four materials of the library simultaneously.

15. The method of claim 12, wherein screening throughput rate of the library is no greater than about ten minutes.

16. The method of claim 12, wherein the force is applied to each of the materials in sequential order and screening throughput rate is no greater than 10 minutes per material.

17. The method of claim 12, wherein the mechanical property is selected from the group consisting of flexure, uniaxial extension, biaxial compression, shear, stress and strain at failure, toughness, Young's modulus, complex modulus, adhesion, and combinations thereof.

18. The method of claim 17, wherein the mechanical property is Young's modulus.

19. The method of claim 12, each of the materials is secured on a surface

of one of the structures that forms each of said capacitors.

20. The method of claim 12, wherein each of the materials has an area of less than about 50 mm^2.

21. The method of claim 12, wherein each of the materials has a thickness of less than about 500 microns.